

SEQUENCE LISTING

<110> Van Eyk, Jennifer E.

Iscoe, Steven D

Simpson, Jeremy A

<120> Methods of Diagnosing Muscle Damage

<130> 1997-023-02US

<140> 09/115,589

<141> 1998-07-15

<150> 60/052,697

<151> 1997-07-16

<160> 18

<170> PatentIn Ver. 2.1

<210> 1

<211> 12

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(12)

<223> Myosin light chain 1

Sub C1
<220>

<221> PEPTIDE

<222> (7)

<223> May be either Pro or Ala

<400> 1

Xaa Xaa Lys Lys Pro Glu Xaa Lys Ala Asp Asp Ala

1

5

10

<210> 2

<211> 12

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(12)

<223> Myosin light chain 1

<400> 2

Xaa Pro Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
1 5 10

<210> 3

<211> 11

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(11)

<223> malate dehydrogenase

<400> 3

Xaa Lys Val Ala Leu Gly Ala Xaa Gly Gly Ile
1 5 10

<210> 4

<211> 13

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(13)

<223> ATP g synthase chain

<400> 4

Xaa Xaa Leu Lys Asp Ile Thr Arg Arg Leu Lys Ser Ile
1 5 10

Duh
C1
Cent
<210> 5

<211> 10

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(10)

<223> ATP synthase oligomycin conferring protein

<400> 5

Xaa Xaa Lys Ieu Val Arg Pro Pro Val Gln
1 5 10

<210> 6
<211> 10
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(10)
<223> serum albumin

<400> 6
Xaa Ala His Lys Ser Glu Ile Ala His Arg
1 5 10

<210> 7
<211> 11
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (4)
<223> May be Arg or Ileu

<220>
<221> PEPTIDE
<222> (1)..(11)
<223> triose phosphate isomerase

Sub C1
Cmt
<400> 7
Xaa Pro Ser Xaa Lys Phe Phe Val Gly Gly Asn
1 5 10

<210> 8
<211> 209
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(209)
<223> Human cardiac troponin I

JUN 30 2000

<220>
<223> Swiss prot identification number P19429

<300>
<303> FEBS Lett.
<304> 270
<306> 57-61
<307> 1990

<400> 8

Ala	Asp	Gly	Ser	Ser	Asp	Ala	Ala	Arg	Glu	Pro	Arg	Pro	Ala	Pro	Ala
1					5			10					15		

Pro Ile Arg Arg Arg Ser Ser Asn Tyr Arg Ala Tyr Ala Thr Glu Pro
20 25 30

His Ala Lys Lys Lys Ser Lys Ile Ser Ala Ser Arg Lys Leu Gln Leu
35 40 45

Lys Thr Leu Leu Leu Gln Ile Ala Lys Gln Glu Leu Glu Arg Glu Ala
50 55 60

Glu Glu Arg Arg Gly Glu Lys Gly Arg Ala Leu Ser Thr Arg Cys Gln
65 70 75 80

Pro Leu Glu Leu Ala Gly Leu Gly Phe Ala Glu Leu Gln Asp Leu Cys
85 90 95

Arg Gln Leu His Ala Arg Val Asp Lys Val Asp Glu Glu Arg Tyr Asp
100 105 110

Ile Glu Ala Lys Val Thr Lys Asn Ile Thr Glu Ile Ala Asp Leu Thr
115 120 125

Gln Lys Ile Phe Asp Leu Arg Gly Lys Phe Lys Arg Pro Thr Leu Arg
130 135 140

Arg Val Arg Ile Ser Ala Asp Ala Met Met Gln Ala Leu Leu Gly Ala
145 150 155 160

Arg Ala Lys Glu Ser Leu Asp Leu Arg Ala His Leu Lys Gln Val Lys
165 170 175

Lys Glu Asp Thr Glu Lys Glu Asn Arg Glu Val Gly Asp Trp Arg Lys
180 185 190

Asn Ile Asp Ala Leu Ser Gly Met Glu Gly Arg Lys Lys Lys Phe Glu

195 200 205

Ser

<210> 9
<211> 186
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(186)
<223> Human slow skeletal troponin I

<220>
<223> Swiss prot identification number P19237

<300>
<303> Genomics
<304> 7
<306> 346-357
<307> 1990

<400> 9

Pro Glu Val Glu Arg Lys Pro Lys Ile Thr Ala Ser Arg Lys Leu Leu
1 5 10 15

Leu Lys Ser Leu Met Leu Ala Lys Ala Lys Glu Cys Trp Glu Gln Glu
20 25 30

His Glu Glu Arg Glu Ala Glu Lys Val Arg Tyr Leu Ala Glu Arg Ile
35 40 45

Pro Thr Leu Gln Thr Arg Gly Leu Ser Leu Ser Ala Leu Gln Asp Leu
50 55 60

Cys Arg Glu Leu His Ala Lys Val Glu Val Val Asp Glu Glu Arg Tyr
65 70 75 80

Asp Ile Glu Ala Lys Cys Leu His Asn Thr Arg Glu Ile Lys Asp Leu
85 90 95

Lys Leu Lys Val Met Asp Leu Arg Gly Lys Phe Lys Arg Pro Pro Leu
100 105 110

Arg Arg Val Arg Val Ser Ala Asp Ala Met Leu Arg Ala Leu Leu Gly

115 120 125
Ser Lys His Lys Val Ser Met Asp Leu Arg Ala Asn Leu Lys Ser Val
130 135 140

Lys Lys Glu Asp Thr Glu Lys Glu Arg Pro Val Glu Val Gly Asp Trp
145 150 155 160

Arg Lys Asn Val Glu Ala Met Ser Gly Met Glu Gly Arg Lys Lys Met
165 170 175

Phe Asp Ala Ala Lys Ser Pro Thr Ser Gln
180 185

<210> 10
<211> 181
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(181)
<223> Human fast skeletal troponin I

<220>
<223> Swiss prot identification number P48788

<300>
<303> Biochim. Biophys. Acta
<304> 1217
<306> 338-340
<307> 1994

Babu C X Com
<400> 10
Gly Asp Glu Glu Lys Arg Asn Arg Ala Ile Thr Ala Arg Arg Gln His
1 5 10 15

Leu Lys Ser Val Met Leu Gln Ile Ala Ala Thr Glu Leu Glu Lys Glu
20 25 30

Glu Ser Arg Arg Glu Ala Glu Lys Gln Asn Tyr Leu Ala Glu His Cys
35 40 45

Pro Pro Leu His Ile Pro Gly Ser Met Ser Glu Val Gln Glu Leu Cys
50 55 60

Lys Gln Leu His Ala Lys Ile Asp Ala Ala Glu Glu Glu Lys Tyr Asp

65

70

75

80

Met Glu Val Arg Val Gln Lys Thr Ser Lys Glu Leu Glu Asp Met Asn
85 90 95

Gln Lys Leu Phe Asp Leu Arg Gly Lys Phe Lys Arg Pro Pro Leu Arg
100 105 110

Arg Val Arg Met Ser Ala Asp Ala Met Leu Lys Ala Leu Leu Gly Ser
115 120 125

Lys His Lys Val Cys Met Asp Leu Arg Ala Asn Leu Lys Gln Val Lys
130 135 140

Lys Glu Asp Thr Glu Lys Glu Arg Asp Leu Arg Asp Val Gly Asp Trp
145 150 155 160

Arg Lys Asn Ile Glu Glu Lys Ser Gly Met Glu Gly Arg Lys Lys Met
165 170 175

Phe Glu Ser Glu Ser
180

<210> 11

<211> 210

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(210)

<223> Rat cardiac troponin I

<220>

<223> Swiss prot identification number P23693

<300>

<303> Biochemistry

<304> 30

<306> 707-712

<307> 1991

<400> 11

Ala Asp Glu Ser Ser Asp Ala Ala Gly Glu Pro Gln Pro Ala Pro Ala
1 5 10 15

Pro Val Arg Arg Arg Ser Ser Ala Asn Tyr Arg Ala Tyr Ala Thr Glu

20 25 30

Pro His Ala Lys Lys Ser Lys Ile Ser Ala Ser Arg Lys Leu Gln
35 40 45

Leu Lys Thr Ile Met Leu Gln Ile Ala Lys Gln Glu Met Glu Arg Glu
50 55 60

Ala Glu Glu Arg Arg Gly Glu Lys Gly Arg Val Leu Ser Thr Arg Cys
65 70 75 80

Gln Pro Leu Val Leu Asp Gly Leu Gly Phe Glu Glu Leu Gln Asp Leu
85 90 95

Cys Arg Gln Leu His Ala Arg Val Asp Lys Val Asp Glu Glu Arg Tyr
100 105 110

Asp Val Glu Ala Lys Val Thr Lys Asn Ile Thr Glu Ile Ala Asp Leu
115 120 125

Thr Gln Lys Ile Tyr Asp Leu Arg Gly Lys Phe Lys Arg Pro Thr Leu
130 135 140

Arg Arg Val Arg Ile Ser Ala Asp Ala Met Met Gln Ala Leu Leu Gly
145 150 155 160

Thr Arg Ala Lys Glu Ser Leu Asp Leu Arg Ala His Leu Lys Gln Val
165 170 175

Lys Lys Glu Asp Ile Glu Lys Glu Asn Arg Glu Val Gly Asp Trp Arg
180 185 190

Lys Asn Ile Asp Ala Leu Ser Gly Met Glu Gly Arg Lys Lys Phe
195 200 205

Glu Gly
210

<210> 12
<211> 186
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)...(186)
<223> Rat slow skeletal troponin I

<220>

<223> Swiss prot identification number P13413

<300>

<303> J. Biol. Chem.

<304> 264

<306> 14327-14333

<307> 1989

<400> 12

Pro Glu Val Glu Arg Lys Ser Lys Ile Thr Ala Ser Arg Lys Leu Met
1 5 10 15

Leu Lys Ser Leu Met Leu Ala Lys Ala Lys Glu Cys Trp Glu Gln Glu
20 25 30

His Glu Glu Arg Glu Ala Glu Lys Val Arg Tyr Leu Ser Glu Arg Ile
35 40 45

Pro Thr Leu Gln Thr Arg Gly Leu Ser Leu Ser Ala Leu Gln Asp Leu
50 55 60

Cys Arg Glu Leu His Ala Lys Val Glu Val Val Asp Glu Glu Arg Tyr
65 70 75 80

Asp Ile Glu Ala Lys Cys Leu His Asn Thr Arg Glu Ile Lys Asp Leu
85 90 95

Lys Leu Lys Val Leu Asp Leu Arg Gly Lys Phe Lys Arg Pro Pro Leu
100 105 110

Arg Arg Val Arg Val Ser Ala Asp Ala Met Leu Arg Ala Leu Leu Gly
115 120 125

Ser Lys His Lys Val Ser Met Asp Leu Arg Ala Asn Leu Lys Ser Val
130 135 140

Lys Lys Glu Asp Thr Glu Lys Glu Arg Pro Val Glu Val Gly Asp Trp
145 150 155 160

Arg Lys Asn Val Glu Ala Met Ser Gly Met Glu Gly Arg Lys Lys Met
165 170 175

Phe Asp Ala Ala Lys Ser Pro Thr Leu Gln
180 185

<210> 13
<211> 181
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)...(181)
<223> Rat fast skeletal troponin I

<220>
<223> Swiss prot identification number P27768

<300>
<308> EMBL/GENBANK/DDBJ DATA BANKS

<400> 13
Gly Asp Glu Glu Lys Arg Asn Arg Ala Ile Thr Ala Arg Arg Gln His
1 5 10 15

Leu Lys Ser Val Met Leu Gln Ile Ala Ala Thr Glu Leu Glu Lys Glu
20 25 30

Glu Ser Arg Arg Glu Ser Glu Lys Gln Asn Tyr Leu Ser Glu His Cys
35 40 45

Pro Pro Leu His Ile Pro Gly Ser Met Ser Glu Val Gln Glu Leu Cys
50 55 60

Lys Gln Leu His Ala Lys Ile Asp Ala Ala Glu Glu Lys Tyr Asp
65 70 75 80

Met Glu Val Lys Val Gln Lys Ser Ser Lys Glu Leu Glu Asp Met Asn
85 90 95

Gln Lys Leu Phe Asp Leu Arg Gly Lys Phe Lys Arg Pro Pro Leu Arg
100 105 110

Arg Val Arg Met Ser Ala Asp Ala Met Leu Lys Ala Leu Leu Gly Ser
115 120 125

Lys His Lys Val Cys Met Asp Leu Arg Ala Asn Leu Lys Gln Val Lys
130 135 140

Lys Glu Asp Thr Glu Lys Glu Arg Asp Leu Arg Asp Val Gly Asp Trp
145 150 155 160

Arg Lys Asn Ile Glu Glu Lys Ser Gly Met Glu Gly Arg Lys Lys Met

165 170 175

Phe Glu Ser Glu Ser
180

<210> 14
<211> 287
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(287)
<223> Human cardiac troponin T

<220>
<223> Swiss prot identification number P45379

<300>
<303> FEBS Lett.
<304> 328
<306> 139-144
<307> 1993

<400> 14

Ser Asp Ile Glu Glu Val Val Glu Glu Tyr Glu Glu Glu Gln Glu
1 5 10 15

Glu Ala Ala Val Glu Glu Gln Glu Glu Ala Ala Glu Glu Asp Ala Glu
20 25 30

Ala Glu Ala Glu Thr Glu Glu Thr Arg Ala Glu Glu Asp Glu Glu Glu
35 40 45

Glu Glu Ala Lys Glu Ala Glu Asp Gly Pro Met Glu Glu Ser Lys Pro
50 55 60

Lys Pro Arg Ser Phe Met Pro Asn Leu Val Pro Pro Lys Ile Pro Asp
65 70 75 80

Gly Glu Arg Val Asp Phe Asp Asp Ile His Arg Lys Arg Met Glu Lys
85 90 95

Asp Leu Asn Glu Leu Gln Ala Leu Ile Glu Ala His Phe Glu Asn Arg
100 105 110

Lys Lys Glu Glu Glu Glu Leu Val Ser Leu Lys Asp Arg Ile Glu Arg

115 120 125

Arg Arg Ala Glu Arg Ala Glu Gln Gln Arg Ile Arg Asn Glu Arg Glu
130 135 140

Lys Glu Arg Gln Asn Arg Leu Ala Glu Glu Arg Ala Arg Arg Glu Glu
145 150 155 160

Glu Glu Asn Arg Arg Lys Ala Glu Asp Glu Ala Arg Lys Lys Lys Ala
165 170 175

Leu Ser Asn Met Met His Phe Gly Gly Tyr Ile Gln Lys Gln Ala Gln
180 185 190

Thr Glu Arg Lys Ser Gly Lys Arg Gln Thr Glu Arg Glu Lys Lys Lys
195 200 205

Lys Ile Leu Ala Glu Arg Arg Lys Val Leu Ala Ile Asp His Leu Asn
210 215 220

Glu Asp Gln Leu Arg Glu Lys Ala Lys Glu Leu Trp Gln Ser Ile Tyr
225 230 235 240

Asn Leu Glu Ala Glu Lys Phe Asp Leu Gln Glu Lys Phe Lys Gln Gln
245 250 255

Lys Tyr Glu Ile Asn Val Leu Arg Asn Arg Ile Asn Asp Asn Gln Lys
260 265 270

Val Ser Lys Thr Arg Gly Lys Ala Lys Val Thr Gly Arg Trp Lys
275 280 285

<210> 15
<211> 277
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(277)
<223> Human slow skeletal tropo~~nin~~ T

<220>
<223> Swiss prot identification number P13805

<300>
<303> J. Biol. Chem.

<304> 262

<306> 16122-16126

<307> 1987

<400> 15

Ser Asp Thr Glu Glu Gln Glu Tyr Glu Glu Glu Gln Pro Glu Glu Glu
1 5 10 15

Ala Ala Glu Glu Glu Glu Ala Pro Glu Glu Pro Glu Pro Val Ala
20 25 30

Glu Pro Glu Glu Glu Arg Pro Lys Pro Ser Arg Pro Val Val Pro Pro
35 40 45

Leu Ile Pro Pro Lys Ile Pro Glu Gly Glu Arg Val Asp Phe Asp Asp
50 55 60

Ile His Arg Lys Arg Met Glu Lys Asp Leu Leu Glu Leu Gln Thr Leu
65 70 75 80

Ile Asp Val His Phe Glu Gln Arg Lys Lys Glu Glu Glu Glu Leu Val
85 90 95

Ala Leu Lys Glu Arg Ile Glu Arg Arg Arg Ser Glu Arg Ala Glu Gln
100 105 110

Gln Arg Phe Arg Thr Glu Lys Glu Arg Glu Arg Gln Ala Lys Leu Ala
115 120 125

Glu Glu Lys Met Arg Lys Glu Glu Glu Glu Ala Lys Lys Arg Ala Glu
130 135 140

Asp Asp Ala Lys Lys Lys Val Leu Ser Asn Met Gly Ala His Phe
145 150 155 160

Gly Gly Tyr Leu Val Lys Ala Glu Gln Lys Arg Gly Lys Arg Gln Thr
165 170 175

Gly Arg Glu Met Lys Val Arg Ile Leu Ser Glu Arg Lys Lys Pro Leu
180 185 190

Asp Ile Asp Tyr Met Gly Glu Glu Gln Leu Arg Ala Arg Ser Ala Trp
195 200 205

Leu Pro Pro Ser Gln Pro Ser Cys Pro Ala Arg Glu Lys Ala Gln Glu
210 215 220

Leu Ser Asp Trp Ile His Gln Leu Glu Ser Glu Lys Phe Asp Leu Met

225 230 235 240
Ala Lys Leu Lys Gln Gln Lys Tyr Glu Ile Asn Val Leu Tyr Asn Arg
245 250 255
Ile Ser His Ala Gln Lys Phe Arg Lys Gly Ala Gly Lys Gly Arg Val
260 265 270
Gly Gly Arg Trp Lys
275

<210> 16
<211> 257
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(257)
<223> Human fast skeletal troponin T

<220>
<223> Swiss prot identification number P45378

<300>
<303> DNA Cell Biol.
<304> 13
<306> 217-233
<307> 1994

<400> 16
Ser Asp Glu Glu Val Glu Gln Val Glu Glu Gln Tyr Glu Glu Glu
1 5 10 15

Glu Ala Gln Glu Glu Glu Val Gln Glu Asp Thr Ala Glu Glu Asp
20 25 30

Ala Glu Glu Glu Lys Pro Arg Pro Lys Leu Thr Ala Pro Lys Ile Pro
35 40 45

Glu Gly Glu Lys Val Asp Phe Asp Asp Ile Gln Lys Lys Arg Gln Asn
50 55 60

Lys Asp Leu Met Glu Leu Gln Ala Leu Ile Asp Ser His Phe Glu Ala
65 70 75 80

Arg Lys Lys Glu Glu Glu Leu Val Ala Leu Lys Glu Arg Ile Glu

85 90 95

Lys Arg Arg Ala Glu Arg Ala Glu Gln Gln Arg Ile Arg Ala Glu Lys
100 105 110

Glu Arg Glu Arg Gln Asn Arg Leu Ala Glu Glu Lys Ala Arg Arg Glu
115 120 125

Glu Glu Asp Ala Lys Arg Arg Ala Glu Asp Asp Leu Lys Lys Lys Lys
130 135 140

Ala Leu Ser Ser Met Gly Ala Asn Tyr Ser Ser Tyr Leu Ala Lys Ala
145 150 155 160

Asp Gln Lys Arg Gly Lys Lys Gln Thr Ala Arg Glu Met Lys Lys Lys
165 170 175

Ile Leu Ala Glu Arg Arg Lys Pro Leu Asn Ile Asp His Leu Gly Glu
180 185 190

Asp Lys Leu Arg Asp Lys Ala Lys Glu Leu Trp Glu Thr Leu His Gln
195 200 205

Leu Glu Ile Asp Lys Phe Glu Phe Gly Glu Lys Leu Lys Arg Gln Lys
210 215 220

Tyr Asp Ile Thr Thr Leu Arg Ser Arg Ile Asp Gln Ala Gln Lys His
225 230 235 240

Ser Lys Lys Ala Gly Thr Pro Ala Lys Gly Lys Val Gly Arg Trp
245 250 255

Lys

Sub C1 C2
<210> 17
<211> 298
<212> PRT
<213> Unknown

<220>
<221> PEPTIDE
<222> (1)..(298)
<223> Rat cardiac troponin T

<220>
<223> Swiss prot identification number P50753

<300>
<303> J. Biol. Chem.
<304> 264
<306> 14471-14477
<307> 1989

<400> 17
Ser Asp Ala Glu Glu Glu Val Val Glu Tyr Glu Glu Gln Glu Glu
1 5 10 15

Glu Asp Trp Ser Glu Glu Glu Asp Glu Gln Glu Glu Ala Val Glu
20 25 30

Glu Glu Asp Gly Glu Ala Glu Pro Asp Pro Glu Gly Glu Ala Glu Ala
35 40 45

Glu Glu Asp Lys Ala Glu Glu Val Gly Pro Asp Glu Glu Ala Arg Asp
50 55 60

Ala Glu Asp Gly Pro Val Glu Asp Ser Lys Pro Lys Pro Ser Arg Leu
65 70 75 80

Phe Met Pro Asn Leu Val Pro Pro Lys Ile Pro Asp Gly Glu Arg Val
85 90 95

Asp Phe Asp Asp Ile His Arg Lys Arg Met Glu Lys Asp Leu Asn Glu
100 105 110

Leu Gln Thr Leu Ile Glu Ala His Phe Glu Asn Arg Lys Glu Glu
115 120 125

Glu Glu Leu Ile Ser Leu Lys Asp Arg Ile Glu Lys Arg Arg Ala Glu
130 135 140

Arg Ala Glu Gln Gln Arg Ile Arg Asn Glu Arg Glu Lys Glu Arg Gln
145 150 155 160

Asn Arg Leu Ala Glu Glu Arg Ala Arg Arg Glu Glu Glu Glu Asn Arg
165 170 175

Arg Lys Ala Glu Asp Glu Ala Arg Lys Lys Ala Leu Ser Asn Met
180 185 190

Met His Phe Gly Gly Tyr Ile Gln Lys Ala Gln Thr Glu Arg Lys Ser
195 200 205

Gly Lys Arg Gln Thr Glu Arg Glu Lys Lys Lys Ile Leu Ala Glu

210

215

220

Arg Arg Lys Val Leu Ala Ile Asp His Leu Asn Glu Asp Gln Leu Arg
225 230 235 240

Glu Lys Ala Lys Glu Leu Trp Gln Ser Ile His Asn Leu Glu Ala Glu
245 250 255

Lys Phe Asp Leu Gln Glu Lys Phe Lys Gln Gln Lys Tyr Glu Ile Asn
260 265 270

Val Leu Arg Asn Arg Ile Asn Asp Asn Gln Lys Val Ser Lys Thr Arg
275 280 285

Gly Lys Ala Lys Val Thr Gly Arg Trp Lys
290 295

<210> 18

<211> 258

<212> PRT

<213> Unknown

<220>

<221> PEPTIDE

<222> (1)..(258)

<223> Rat fast skeletal troponin T

<220>

<223> Swiss prot identification number P09739

<300>

<303> J. Mol. Biol.

<304> 188

<306> 313-324

<307> 1986

<400> 18

Ser Asp Glu Glu Thr Glu Gln Val Glu Glu Gln Tyr Glu Glu Glu
1 5 10 15

Glu Ala Gln Glu Glu Glu Val Gln Glu Glu Ala Pro Glu Pro Glu Glu
20 25 30

Val Gln Glu Glu Glu Lys Pro Arg Pro Lys Leu Thr Ala Pro Lys Ile
35 40 45

Pro Glu Gly Glu Lys Val Asp Phe Asp Asp Ile Gln Lys Lys Arg Gln

50

55

60

Asn Lys Asp Leu Met Glu Leu Gln Ala Leu Ile Asp Ser His Phe Glu
65 70 75 80

Ala Arg Lys Lys Glu Glu Glu Glu Leu Ile Ala Leu Lys Glu Arg Ile
85 90 95

Glu Lys Arg Arg Ala Glu Arg Ala Glu Gln Gln Arg Ile Arg Ala Glu
100 105 110

Lys Glu Arg Glu Arg Gln Asn Arg Leu Ala Glu Glu Lys Ala Arg Arg
115 120 125

Glu Glu Glu Asp Ala Lys Arg Arg Ala Glu Asp Asp Leu Lys Lys Lys
130 135 140

Lys Ala Leu Ser Ser Met Gly Ala Asn Tyr Ser Ser Tyr Leu Ala Lys
145 150 155 160

Ala Asp Gln Lys Arg Gly Lys Lys Gln Thr Ala Arg Glu Met Lys Lys
165 170 175

Lys Ile Leu Ala Glu Arg Arg Lys Pro Leu Asn Ile Asp His Leu Ser
180 185 190

Asp Asp Lys Leu Arg Asp Lys Ala Lys Glu Leu Trp Asp Thr Leu Tyr
195 200 205

Gln Leu Glu Thr Asp Lys Phe Glu Phe Gly Glu Lys Leu Lys Arg Gln
210 215 220

Lys Tyr Asp Ile Thr Thr Leu Arg Ser Arg Ile Asp Gln Ala Gln Lys
225 230 235 240

His Ser Lys Lys Ala Gly Ala Thr Ala Lys Gly Lys Val Gly Gly Arg
245 250 255

Trp Lys